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BUREAU OF PLANT INDUSTRY
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THE PLANT DISEASE REPORTER

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OFFICE OF MYCOLOGY AND DISEASE SURVEY

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DISEASES OF VEGETABLES

FERTILIZER INJURY TO POTATOES, SOUTH CAROLINA

Commencing about April 25 complaints of damage to early potatoes, principally Irish Cobblers, were received by the County Agent of Beaufort County, South Carolina. Collaborator G. M. Armstrong of Clemson College went over some of the fields on April 28, and in company with R. W. Hamilton and H. P. Cooper, of the Department of Agronomy, Clemson College and T. H. Seabrook, County Agent, I had the opportunity to go over the situation May 6-8.

It was the unanimous opinion that the trouble was not due to parasitic or virus diseases but rather to the commercial fertilizers used coupled with the sandy soils and prevailing dry weather conditions. There was some early blight in most fields but it appeared to be decidedly a secondary and not a primary factor. There were traces of mild mosaic, Rhizoctonia and wilt but they were of minor importance and no more than is to be expected. The conclusions, as stated by Messrs. Hamilton and Cooper are,

> "The extensive damage to potatoes is due to a combination of light sandy soils, low water-holding capacity of these soils, lack of organic matter, and the excessive use of fertilizers containing large amounts of muriate of potash, manure salts, or kainit in the fertilizer. These three sources of potash are high in chlorine. Chlorine may be readily absorbed by certain plants. Excessive amounts of chlorine may limit or exclude the absorption of other necessary plant food materials, this may often result in the yellowing and destruction of the leaf tissue.
>
> "In a year of ordinary rainfall the chlorine may be kept in such a dilute concentration that no serious injury to plant tissue is noticeable. Also in soil that is abundantly supplied with organic matter or through its physical condition has a better natural water-holding capacity the chlorine is diluted by the water to such an extent that it is not seriously damaging to the plant.

"The extremely heavy rainfall around April 3, probably leached out considerable soluble nitrogen yet did not leach out all of the chlorine as the latter is not as readily soluble as some of the inorganic nitrogens. This added to the trouble."

The remedies suggested by Mr. Hamilton for the present are:

"(1) Add organic matter to the light soils.
(2) The light soils cannot tolerate extremely high applications of fertilizer.
(3) Use sulphate of potash as a source of potash rather than large amounts of muriate, manure salts, or kainit."

R.J.H.

TWO INTERESTING REPORTS ON POTATO DISEASES

Violet root rot, Rhizoctonia crocorum, in Oregon: The potatoes were grown in sandy loam soil - the land having been cleared but a few years. The grower says the infections were in patches in the planting. Of the 7,000 lbs. yield about 600-700 lbs. of the tubers show the disease. This report is from Sublimity, Marion County, Oregon. (S. M. Zeller, March 4)

Blackleg, Bacillus phytophthorus, in Arkansas: We have just received several specimens of Irish potato plants from Lonoke, Arkansas, badly diseased with blackleg. This disease is ordinarily rather uncommon in this state but was prevalent to some extent last year and is showing up rather early this year. (H. R. Rosen, May 5)

WHITE ROT OF ONION REPORTED

The disease of onion caused by Sclerotium cepivorum has been found again in Virginia. On April 10, Collaborator S. A. Wingard of the Virginia Agricultural Experiment Station received some Improved Yellow Globe onions showing typical symptoms of this disease from Surry County, Virginia. These were forwarded to this office and relayed to J. C. Walker, Madison, Wisconsin who also confirmed the diagnosis. These plants were grown from apparently healthy bulbs set out last November. They were disinfected in formaldehyde solution (1 pint to 30 gallons) and planted on old soil following sweet corn. At the present time it is uncertain as to how the fungus was introduced. Further investigation is in progress by the Virginia pathologist.

This is the fourth authentic report of the occurrence of this disease in this country. The first was from La Grande, Oregon, in 1918, the second from a farm near Norfolk, Virginia, in 1923, 1924, and 1925, and the third from a single field near Louisville, Kentucky, in 1925. In parts of Europe this is a destructive disease and one that has to be contended with constantly

The disease is known to attack the common onion, Allium cepa, the Welsh onion, A. fistulosum, leek, A. porri, garlic, A. sativum, and shallot, A. ascalonicum.

The characteristic symptoms of white rot are a rotting of the roots and bulbs, an abundance of white mycelium in and between the bulb scales, and the presence of numerous minute black sclerotia.

Readers of this "Reporter" are asked to watch for white rot or any disease resembling it, and to report the same to the Survey. On account of its temperature relations it is more likely to be found in southern sections where winter onions are grown than in northern locations where the plants are not in the ground over winter.

R.J.H.

SOME REPORTS ON DISEASES OF TOMATOES

Nailhead spot, Macrosporium tomato, on tomatoes from Mexico: The Syracuse District Inspector of the Merchants' Dispatch Inc. states that nailhead rot of tomatoes, caused by Macrosporium tomato, occurred in varying percentages, but frequently quite severe in every car of Mexican tomatoes received during March and early April. Doubtless it has occurred since, but I have had no word. (J. G. Horsfall, Geneva, N. Y., May 6)

Damping-off, Phytophthora sp., in New York: Tomatoes, in March, were subject to extensive damping-off by Phytophthora sp. in several greenhouses in western New York. One company at Brockport was compelled to discard 900 seedling flats late in March. This represents a loss of 90,000 seedlings. Also one grower at Fredonia suffered much loss of seedlings from damping-off. Several other men in Chautauqua County lost heavily from the malady. (J. G. Horsfall, May 6)

DISEASES OF FRUITS

FURTHER NOTES ON APPLE SCAB (VENTURIA INAEQUALIS)

New York: Recent counts corroborate last week's findings that abundant ripe ascospores are present in infected McIntosh leaves throughout western New York. Serious infection can now occur if a rain period of sufficient duration occurs.

Serious amounts of mature ascospores are now present in infected Baldwin and Greening leaves of the Central Lake counties and the earlier zones of the Lake Ontario counties. (W. D. Mills, April 26)

Pennsylvania: We have had very hard work getting proper spraying done this spring due to the unusual conditions prevailing. One week it would be absolutely too cold to do spraying, and then within the next few days a hot wave would come which made the blossoms jump from almost dormancy to a late pink condition. The variation in the opening of buds of different varieties of apples has varied

very much this year, so that in the same orchard some varieties would be in pink and other varieties practically dormant. The difference in the opening of buds in the southern counties and the northern counties has also varied more than usual.

Table 16. Summary of the development of apple scab spores in central Pennsylvania up to May 8, 1930.

County	No. perithecia counted	Per cent perithecia with brown spores	Locality	Date
Tioga	25	44 with hyaline spores	Wellsboro	Feb. 2
	20	50	"	Mar. 21
Bedford	25	60	Bedford	Mar. 31
Blair	8	25	Bellwood	Mar. 18
	15	78	Hollidaysburg	" 31
Luzerne	25	76	Orange	Mar. 5
	18	100	Berwick	Apr. 10
	25	96	Orange	May 2
	25	100	Mecker	" 2
Union	25	55	Beaver orchards	Apr. 10
Snyder	25	60	Selins grove	Apr. 8
Columbia	30	100	Numidia	Apr. 9
	13	100	"	" 17
Huntingdon	25	84	Huntingdon	Apr. 1
Wayne	15	46 mature asci	Gravity	Mar. 20
Susquehanna	15	53	New Milford	Mar. 20
	25	44	Montrose	" "
Lackawanna	25	57	Schultzville	Mar. 20
	27	31	"	Apr. 10
	45	40	Waverley	Mar. 20
	20	45	"	Apr. 10
Franklin	25	100	Edenville	Apr. 4
	20	100	Greencastle	" 18
Cumberland	25	100	Walnut Bottom	Apr. 18
	25	100	Newville	" "

(G. L. Zundel, May 6)

Illinois: First observed at Urbana on April 30. Apples were just past the full bloom period. The infection is extremely severe on unsprayed trees. It is a diffused type frequently covering the entire leaf surface. One orchard which had not been received a pre-bloom spray was sprayed with lime sulphur about the time the scab lesions were first evident, with the result that very severe injury occurred and defoliation was very serious. (H. W. Anderson, May 8)

BLIGHT (BACILLUS AMYLOVORUS) ON APPLE IN GEORGIA AND ILLINOIS

Georgia: The following table shows the amount of blight on different varieties in a 750-acre apple orchard in Habersham County. The six varieties that show a good deal of blight this year were very heavily infected last spring. This spring in Habersham County has been very dry compared to the last.

Table 17. Blight in 750-acre apple orchard in Habersham County, Georgia.

Variety	No. trees	Per cent trees infected	Per cent infected blooms on tree	Part infected
York Imperial	100	10	10-15	blossom, leaf, spur
Jonathan	3,000	4	1-2	" " "
Red Astrakan	5,000	3	1	" " "
Stayman Winesap	7,000	1	slight	" " "
Yellow Transparent	6,000	2	4	" " "
Kinnard Choice	4,500	5	5	" " "
Mammoth Black Twig	5,000	none	-	- - - - -
Rome Beauty	4,000	"	-	- - - - -
Red June	2,800	"	-	- - - - -
Yates	2,000	"	-	- - - - -
Terry	2,000	"	-	- - - - -
Ben Davis	2,500	"	-	- - - - -
Stark Delicious	3,000	"	-	- - - - -
Arkansas Black	4,000	"	-	- - - - -
Winesap	2,000	"	-	- - - - -

The six varieties that show a good deal of blight this year were very heavily infected last spring. This spring in Habersham County has been very dry compared to the last. (J. H. Miller, April 26)

Illinois: Fire blight appeared in southern Illinois (Johnson County) on apples May 2. Spur blight is common, while twig blight is rare. The apples were at this time about three weeks past the full bloom. (H. W. Anderson, May 8)

EARLY INFECTION OF BACTERIUM PRUNI ON PEACH IN ILLINOIS

Bacterial spot of peach (Bacterium pruni) was found on leaves in three localities in southern Illinois on April 25-26. This is the earliest record we have. Only a few infected leaves were found and these were associated with definite cankers from which viable bacteria were isolated. We think we have a clear case of primary infection from overwintering cankers. There seems to be some relation between winter injury and the production of these cankers. (H. W. Anderson, May 8)

WINTER INJURY TO CHERRIES IN WASHINGTON

The following report is quoted with permission from the Bureau of Agricultural Economics Fruit and Vegetable Division Letter 11: 166, May 9:

> "Winter injury to cherries is reported severe in many orchards, both at Kennewick and around Prosser. Since this is one of the earliest sections in the Northwest and the injury did not show up until some time after the bloom period, it will not be surprising if cherries in later districts show injury before the harvest period. Nor will it be surprising if other fruits not yet showing any of this injury, have it become apparent when hot summer weather steps up the transpiration in the trees. Some of the orchards at Kennewick have a crop reduction of more than 50 per cent below the bloom prospect. It is interesting to note that the trees showing injury are generally old, 15 years or more, and are planted on level land where air and water drainage conditions are not ideal. Within a short distance of some of the badly injured orchards there is a 20-acre orchard of 10-year old trees planted on a gentle slope which shows a full crop and no injury at the present time. There has been no loss from spring frost in eastern Washington to date." (F. E. Bailey, April 30)

DISEASES OF CEREAL AND FORAGE CROPS

SEARCH FOR FLAG SMUT OF WHEAT BEING MADE

Plans have been made for an examination of wheat fields in the original areas of Illinois, Missouri and Kansas where flag smut has been known to occur in years past. It has been several years since a check-up has been made to see what the situation is and how it has changed. In Illinois it is known that infection has been markedly reduced partly on account of control measures that have been applied but more especially because of killing of infected plants by severe winters. To what extent winter injury has been a factor in affecting prevalence in the other two states is uncertain.

Flag smut has made its appearance this year in Illinois. On April 25, H. H. McKinney found a single plant in his plots at Granite City, Illinois, and on May 2, he and Dr. Leighty examined eight wheat fields in the vicinity of Granite City as well as the nursery plots and found one flag smut plant in each of two fields, and four more infected plants in the nursery.

R.J.H.

NOTES ON CEREAL RUSTS

By the end of April stem rust was appearing on susceptible wheats in central Texas, but no stem rust had been found on oats north of San Antonio. Leaf rust of wheat was general, except on durums, and crown rust of oats was abundant south of Fredricksburg and Austin, although on April 27 it was not found north of there. Last year, it will be remembered, overwintering of stem rust was fairly abundant in central Texas, and by late April there was considerable spread. This year, because of the severity of the winter, survival of stem rust was very rare, and leaf rust survived less commonly than usual throughout the Southern Great Plains area. In Illinois, however, in spite of periods of unfavorable conditions, leaf rust overwintered abundantly in the winter wheat belt of the southwest.

Barberry bushes have begun to rust in some of the states of the spring wheat and soft red winter wheat areas. Aecia have been formed on bushes in Ohio, and with somewhat more favorable conditions should be forming elsewhere soon. Warm weather and, in some locations, additional moisture are needed for development of the infection.

In Mexico, unfavorable conditions have limited the spread of stem rust. Present reports indicate that there is heavy infection only in certain sections south of Mexico City. (The Rust Reporter 10: 1. May 7, 1930)

DOWNY MILDEW (PERONOSPORA VICIAE) ON A HYBRID VETCH IN GEORGIA

In the agronomy plats Mr. Tabor has a vetch which is a cross between Vicia angustifolia and V. villosa. This hybrid is just covered with downy mildew (Peronospora viciae Berk.) while the other varieties are not touched. This is rather interesting because the mildew is rather common on the wild angustifolia but very rare on villosa, and the cross is infected much worse than either parent. (J. H. Miller, April 26)

DISEASES OF ORNAMENTALS

ANTHRACNOSE OF SWEET WILLIAM

Marjorie E. Swift, of the New York Botanic Garden, has sent in the following note (May 7):

"We have noted this spring an anthracnose of Sweet William (Dianthus barbatus) reference to which has not as yet been found in the literature. It appears to be caused by a Volutella closely resembling V. dianthi of Atkinson. It developed among plants grown from seed, causing them finally to collapse, reducing the stems to a dry papery condition with numerous black setose fruit bodies appearing chiefly on the stems but also on the leaves."

SPECIMENS RECEIVED

Synchytrium infestans Rytz. on Lepidium sp., Baton Rouge, East Baton Rouge Parish, Louisiana, collected by C. W. Edgerton, Feb. 27. Determined by J. J. Davis.